

BARRICK MERCUR GOLD MINES, INC.

March 15, 1990

Mr. Lowell P. Braxton
Associate Director, Mining
Division of Oil, Gas & Mining
Utah Department of Natural Resources
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203

RECEIVED
MAR 15 1990

DIVISION OF
OIL, GAS & MINING

Dear Mr. Braxton:

SUBJECT: Application to Revise Large Mining Operation
M/045/017-88(1), Tooele County

Please find attached the following documents which are submitted pursuant to your letter dated November 20, 1989 and our meeting with your staff on February 16, 1990:

- Revised text/map/drawing insert replacements for the previously filed August 15, 1989 Revised Application for Permit Revision, Barrick Mercur Mine, prepared by JBR Consultants Group for Barrick (G. M. Eurick) with transmittal report.
- Completed Self-Bonding and Indemnity Agreement.
- Dump Leach No. 3 Design Document prepared by Barrick Resources (USA), Inc. for the Utah Bureau of Water Pollution Control, February 1990. — SEPARATE VOLUME (i.e. NOT IN NOI)
- Groundwater Assessment for Dump Leach Area No. 3, Barrick Mercur Gold Mine, Utah, for Barrick Resources (USA), Inc., prepared by Dames & Moore, January 1990. — SEPARATE VOLUME

INSERTED
INTO
NOI/PLAN

It is our belief that the information submitted herewith is complete and adequately addresses the Division's concerns expressed in your November 20, 1989 letter. We would anticipate your expeditious review and approval of this permit revision request, as our construction schedule is now critical.

Mr. Lowell P. Braxton
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Please contact me should you have any questions concerning this submittal. We will continue to provide all cooperation necessary to ensure a mutually beneficial resolution of this issue.

Respectfully,



Glenn M. Eurick
Environmental Affairs Coordinator (USA)

GME/cg

Attachments

cc: F. D. Wicks
C. L. Landa
E. E. Maurer
T. B. Faddies
M. P. Richardson
R. R. Sacrison
M. S. Staheli
J. Urbanik (Tooele County)
S. Brooks (BLM)
B. Tripp (DSL&F)



CONSULTANTS GROUP

GEOLOGY

ENGINEERING

ENVIRONMENT

HYDROLOGY

March 12, 1990

Mr. Glenn Eurick
Barrick Resources (USA), Inc.
Mercur Mine
P. O. Box 838
Tooele, Utah 84074

Dear Mr. Eurick,

We have prepared a written response to the Division of Oil, Gas, and Mining's November 20, 1989 letter requesting clarification on specific portions of the August 15, 1989 Revised Application for Permit Revision, Barrick Mercur Mine. This letter references the page and item number from the DOGM November letter and then provides answers to those questions based on our discussions. Maps 2.2-5 and 2.4-3 have been changed based on comments made by Wayne Hedburg during our February 16, 1990 meeting.

Many of the questions presented in the November DOGM letter were based on information contained in the "Narrative Supplement to Form MR-REV, November 1988". This narrative was inadvertently included with the August revision and has caused much confusion with the DOGM staff. This narrative supplement was submitted to the Division in November 1988 with Form MR-REV also submitted at that time. The information contained in this narrative has been integrated into the updated NOI and therefore, should not undergo further review. This supplement should be discarded to cease any further confusion.

JBR has prepared the following responses to the questions asked by DOGM.

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R613-004-105 - Maps, Drawings and Photos

1. Barrick made a verbal agreement with the DOGM staff in March 1989 that would permit all revisions (including revisions made between the December 15, 1986 NOI and August 1989) to be included in a completely revised and updated NOI. This updated document, including text and all tables, figures, and maps, would replace the existing NOI and integrate all revisions made since that time. The updated August 1989 NOI does not reference past maps or other materials associated with the past submittal documents.

2. Again, the August 1989 revision of the Barrick NOI is intended to replace the existing NOI.

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3. The design details and maps for Dump Leach 3 may be found in the Dump Leach 3 Design Document that has been prepared by Ralph Sacrison of your staff.

4. The Rover Hill dump leach facility remains conceptual at this time and Barrick acknowledges that no approval from the division for any aspect of its construction or operation is hereby received.

5. Attachments 1 and 2 referenced on page 2 of 4 of the November 1988 Narrative Supplement for Form MR-REV refers to Map 1.2-1 Central Mercur Land Map and Map 2.4-2 Surety Bond Reference, respectively. However, the information contained in this supplement has been included in the text of the August revision. Further reference to this supplement should be deleted.

R613-004-106 - Operation Plan

1. Topsoil stockpile T9 (currently at 45,301 cubic yards) will be relocated in June 1990 to a new site, T18, approximately 1000 feet southeast of its current location. Stockpile T18 will contain approximately 45,000 cubic yards at that time.

Topsoil stockpile T12 (currently at 39,445 cubic yards) will be relocated to stockpile T13 in June 1990. T13 will increase from its current status of 49,293 cubic yards to approximately 88,738 cubic yards.

Topsoil stockpile T14 (3,500 cubic yards) has been relocated to topsoil stockpile T15 as of March 1989.

Topsoil stockpile T16 was never created. All material intended for placement on T16 site was placed on stockpile T15. Current status of T15 is 107,195 cubic yards.

2. The original plan was to use the existing topsoil stockpile T15 as an impounding structure for runoff from the drainage that exits to the west and allow runoff from the north watershed (hereafter called Dead Horse Canyon) to soak into the stockpile. These plans have been revised to route runoff around the stockpile.

Runoff from Dead Horse Canyon will be diverted into a ditch constructed where topsoil stockpile T15 meets the natural hillside to the west (Map 2.2-5). Silt Fence 6 will be placed at the mouth of this canyon to control discharge onto the topsoil stockpile and aid in diverting runoff into a diversion channel. The fence will be constructed of felt material with construction specifications similar to the silt fences already constructed. The diversion

ditch constructed around T15 will be triangular and sized to carry the 10-year 24-hour runoff volume of 288 cfs. The ditch will sloped at a gradient of about 3 percent and will be 4.0 feet deep and 16 feet wide at the channel top.

Runoff discharge from this ditch will initially be routed into a small basin west of the stockpile where the water will be routed beneath the access road via a 24 inch diameter culvert. Temporary ponding will occur behind Dump Leach 3 before draining through the 6-inch diameter subdrain for discharge downstream of Dump Leach 3. The impoundment capacity of the Dead Horse Canyon/ Dump Leach 3 settling/ dewatering basin is 61.8 acre-feet.

To provide additional protection against runoff onto the Dump Leach 3 plant site, a ditch will be constructed on the natural hillside above stockpile T15 and the leach plant site to divert runoff from this hillside into the Dead Horse Canyon dewatering area.

3. The 6-inch diameter subdrain has inlets at two locations. One inlet has been placed at the mouth of Dead Horse Canyon (located due north of Dump Leach 3) and a second inlet surfaces to the east of the Dump Leach 3 plant site. Both subdrain inlets will be protected from closure due to sediment deposition by wrapping the pipe opening with 16 mesh trash screen, covering the 20 foot section of perforated inlet pipe with geotextile and rocks, and placing a silt fence completely around the inlet pipe to control sediment transport to the pipe inlet (Detail A-A Drawing 8.88.2 of the Dump Leach 3 Design Document). Additional measures of protection against sediment clogging include placing the inlet on a gradient beginning slightly above the lower section of the depression to permit ponding thereby causing suspended sediment deposition before runoff enters the subdrain inlet. A silt fence will be placed around the subdrain inlet to control sediment movement to the subdrain inlet.

The Dead Horse Canyon/ Dump Leach 3 settling/ dewatering pond capacity is 61.8 acre-feet. If ponding exceeds the capacity of this basin, the overflow will drain along the mine haul road constructed on the west side of Dump Leach 3. The overflow will drain along the road surface between the natural hillside on the west and a compacted five foot high berm on the east. Drainage would continue along the roadway until discharge into the Marion Hill Pit.

The eastern branch subdrain inlet surfaces on the east end of the Dump Leach 3 process area. The subdrain settling/ dewatering basin has a capacity of 61.3 acre-feet. If this basin fills during a runoff event, the overflow will drain along the plant access road between a five foot high compacted berm on the west and the natural hillside. The Dump Leach 3 plant foundation will be elevated

approximately four feet above this overflow elevation to prevent flooding of the plant site. As runoff reaches the face of Dump Leach 3, the runoff will be diverted along a channel constructed where the dump face intercepts the natural hillside. From here, the runoff will be stored in Meadow Canyon roadside impoundment.

The subdrains are intended to route water beneath Dump Leach 3 during seasonal and annual runoff events. The drain has not been sized to carry runoff from any specific return period event. If larger runoff events occur, the additional runoff volume will be routed through the overflow areas, along each side of Dump Leach 3 within the haul roads, and discharged either into Meadow Canyon Impoundment or Marion Hill pit. Runoff from Meadow Canyon will be desilted by silt fences 7 and 8 before reaching the subdrain basin.

Runoff from Meadow and Dead Horse Canyons will be diverted in the same manner after reclamation as was occurring during operations with one exception. The subdrain will be capped following reclamation to allow drainage without subdrain maintenance.

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R613-004-106 & 109 Operation Plan and Impact Assessment

Generally, waste dumps at Mercur are composed of limestones, silty limestones, limey siltstones, siltstones, limey shales, and shales. This material comes from the Long Trail member, Mercur member, and Topliff member of the Mississippian-age Great Blue formation. Acid, specifically sulfuric acid, may be produced as the sulfides oxidize, resulting from the sulfur ion combining with the hydrogen and oxygen ion in infiltrating water.

The following is data on sulfur content in Mercur district rock (Tafari, PhD Thesis, 1987).

Rock Type	% Sulfur
Composite A Oxide	0.65
Composite D Sulfide	1.50
Overall Composite	0.85
Average, Topliff Member	0.05
Average, Mercur Member	N/A
Mercur Mineralized Member	
Average Upper Bed Oxide	0.10
Average Upper Bed Sulfide	2.40
Average Magazine Beds	0.15
Average Silver Chert	0.50

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No documented work has been done on the Long Trail Shale member. However, the best estimate can be given as 2 to 3 percent sulfur content. Since this material is primarily used as a liner material in Mercur dump leach construction, a very minimal locally deposited amount would be realized on any waste dump.

Dumps constructed using waste from our Marion Hill pits (i. e. Dump Leach 3 foundation, Visitor's Center dump) are composed primarily of Lower Mercur member rocks with a sulfur content ranging from 0.1 to 0.5 percent.

Dumps constructed using waste from our Mercur Hill pits (i. e. North Sacramento dump, Mercur area dumps, etc.) are composed primarily of Upper Mercur member and Long Trail member rocks with sulfur content ranging from 0.6 to 3 percent. The range of sulfur varies greatly due to the state of oxidation and the amount of shale deposited locally.

Dumps constructed using waste from our Sacramento pit (i. e. Sunrise dump), are to date, composed primarily of Eagle Hill rhyolite containing virtually no sulfides, strongly cooked Long Trail member in which the sulfides have been removed by "stewing" or supergene oxidation, and oxidized Upper Mercur Member which may contain up to 0.6 percent sulfur. In looking at the Sacramento pit mining schedule, and information obtained from drilling, the Sunrise dump will be composed mostly of rhyolite and, therefore, should be nearly devoid of acid forming material.

In addition, the waste rock will be placed in previously approved dumps with the exception of waste rock removed from the Sacramento Pit which will be placed on the Sunrise Dump.

R613-004-107 - Operation Practices

Barrick intends to continue salvaging all available topsoil from areas to be disturbed. Should a topsoil deficit be realized, it is anticipated that utilization of revegetation techniques and experiences involving direct dump seeding, subsoil utilization, etc. will offset this occurrence.

Barricks position remains constant in that those areas subject to adjacent landowner or public access visual impact will be given priority in terms of topsoiling and seeding. Non-visual impact areas will receive secondary emphasis. This procedure is an integral aspect of our final reclamation plan, pursuant to our conditional use permit from Tooele County.

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R613-004-110 - Reclamation Plan

1. Upon reclamation, the two subdrain inlets will be capped to prevent future runoff from occurring through this pipe. During reclamation, topsoil stockpile T15 will be utilized thus creating a large impoundment area at the mouth of Dead Horse Canyon. All runoff from the two watersheds upgradient will be impounded behind Dump Leach 3. The compacted roadside berms, on both sides of Dump Leach 3, will be kept in place following reclamation. All but a ten feet width of the haul and access road surfaces along Dump Leach 3 will be ripped, scarified, and revegetated. This would allow continued access to Meadow and Dead Horse Canyons and permit the road surfaces and vegetated roadside borders to be used for water diversion. Given the width between the roadside berms and the natural hillsides (60 to 100 feet), runoff in excess of the 100-year, 24-hour peak runoff event could continue to be diverted along the road following reclamation. Continued use of these roads as diversion channels will also control sedimentation.

Following reclamation, runoff water draining from Meadow and Dead Horse Canyons will first impound behind Dump Leach 3. Runoff volumes in excess of the capacity of these impoundments will drain along the revegetated haul and plant access road diversion channels for discharge into the Marion Hill or Golden Gate pits. Runoff from Meadow Canyon will drain from the haul road surface down the dump face/ natural hillside interface channel to the restored stream channel where the Meadow Canyon impoundment existed. All sediment originating in the upper reaches of Meadow and Mercur Canyons will collect within the Dump Leach 3 impoundments.

2. Given that the compacted roadside berms will be kept in place following reclamation, all but 10 feet width of the road surfaces will be ripped and scarified permitting the roads to be revegetated and used as a runoff channel as needed. Given the width of the roads in this area, runoff in excess of the 100-year, 24-hour runoff volume to be diverted along the road following reclamation.

3. Map 2.4-3 has been revised to show post reclamation runoff diversions including the road diversion channels on either side of Dump Leach 3. Arrows showing the direction of flow has also been added to this map as well as Map 2.2-5 Runoff Management Plan to indicate the direction of flow.

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R613-004-110 & 111 - Reclamation Practices

Reference to Attachment 2 in the November 1988 Narrative Supplement to Form MR-REV refers to Map 2.4-2 Surety Bond Reference. The information contained in this supplement has been included in the text of the August revision and should therefore be discarded.

R613-004-113 Surety

1. The Division requires that the reclamation agreement and surety forms submitted as part of the November 1988 revision be revised. This revised form should be completed and sent to DOGM with these revisions.

2. The application for self-bonded surety should be submitted to DOGM following the availability of the audited financial statement by American Barrick Resources Corporation.

We have also revised the pages of the August 1989 NOI revision so that these pages may replace the existing outdated pages of this document. Each revised page has been numbered and should replace the page of the same number in the August report. In addition, Maps 1.1-1, 2.1-1, 2.2-2, 2.2-3, 2.2-4, 2.2-5, 2.4-1, 2.4-2 and 2.4-3 have been updated and are also included with this revision. The old maps should be pulled from the August 1989 NOI and discarded. This revised maps are designed to replace the older editions.

and
2.2-1

If you have any questions regarding information contained in this letter or the accompanying revised text or maps, please call.

Sincerely,



Rick Pole
Hydrologist

cc. Brian Buck